

What is claimed is:

1. A process for fabricating an article comprising a superconducting body, comprising the steps of:

providing an intermediate body comprising:

MgB₂ powder or precursor powder capable of reacting to form MgB₂;

optionally, a diffusion barrier layer around the powder, the diffusion barrier layer acting to inhibit diffusion of Mg through the layer; and

a cladding around the powder or around the powder and the diffusion barrier layer;

forming an elongate body from the intermediate body by one or more cross-section reducing operations; and

heat treating the elongate body to substantially sinter the MgB₂ powder or to react the precursor powder to form MgB₂ powder and substantially sinter the resulting MgB₂ powder.

2. The process of claim 1, wherein the diffusion barrier layer is present and comprises one or more elements selected from the group consisting of Fe, Ni, Ti, Mo, Nb, Ta, W, V, and Hf.

3. The process of claim 2, wherein the diffusion barrier layer consists of one or more metals selected from Fe, Ni, Ti, and alloys rich in Fe, Ni, or Ti.

4. The process of claim 1, wherein the intermediate body is free of the diffusion barrier layer, and wherein the cladding comprises one or more elements selected from the group consisting of Fe, Ni, Ti, Mo, Nb, Ta, W, V, and Hf.

5. The process of claim 4, wherein the cladding consists of one or more metals selected from the group consisting of Fe, Ni, Ti, or alloys rich in Fe, Ni, or Ti.

6. The process of claim 1, wherein the intermediate body further comprises non-superconductive particles or wires within the MgB₂ powder or within the precursor powder capable of reacting to form MgB₂, and wherein

the particles or wires are plastically deformed during the step of forming the elongate body.

7. The process of claim 6, wherein the particle or wires are reactive with the MgB_2 .

5 8. The process of claim 1, wherein the intermediate body further comprises non-superconductive particles within the MgB_2 powder or precursor powder capable of reacting to form MgB_2 , and wherein the particles remain substantially unchanged in shape and size during the step of forming the elongate body.

10 9. An article comprising a superconducting body, the body comprising: MgB_2 superconducting material; optionally, a diffusion barrier layer around the MgB_2 material; and a metal cladding around the MgB_2 material or around the MgB_2 material and the diffusion barrier layer.

15 10. The article of claim 9, wherein the diffusion barrier layer is present and comprises one or more elements selected from the group consisting of Fe, Ni, Ti, Mo, Nb, Ta, W, V, and Hf.

11. The article of claim 10, wherein the diffusion barrier layer consists of one or more metals selected from Fe, Ni, Ti, and alloys rich in Fe, Ni, or Ti.

20 12. The article of claim 9, wherein the body is free of the diffusion barrier layer, and wherein the cladding comprises one or more elements selected from the group consisting of Fe, Ni, Ti, Mo, Nb, Ta, W, V, and Hf.

25 13. The article of claim 12, wherein the cladding consists of one or more metals selected from the group consisting of Fe, Ni, Ti, or alloys rich in Fe, Ni, or Ti.

14. The article of claim 9, wherein the body further comprises non-superconductive stringers or wires within the MgB_2 material.

15. The article of claim 14, wherein the stringers or wires are reactive with MgB_2 .

17. The article of claim 9, wherein the body is configured as a wire or a ribbon.

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